

Kevin Thomas Varner Feature Obit

Supporting Materials

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Sun 1/13/2019 9:07 PM

To run in the Kanabec County Times and the Star Tribune

This is my self-written obituary: Kevin Thomas Varner of Ogilvie, Minnesota, son of Tom and Edna Varner (both deceased) died _____ at the age of _____. Cancer got me. I am survived by sister Sue (Denny) Varner Frase Haven, dual residents of Minnesota and Florida; brothers Bob (Deb), Burnsville; and Stu (Carol Ann), North Pole, Alaska, along with a fistful of nieces and nephews. I never married.

In the eyes of the world, for much of my life, I was "unemployed." I did a bunch of strange, surreal pictures during this supposedly lackadaisical period...along with my equally strange scientific research.

Up until cancer made me too weak, I was employed for many years as a machine operator at Olympak in Mora, Mn. Thanks to all the good people there for their support!

The main "take-away" point of this self-written obituary is to finally open up concerning the above-noted "strange scientific research." Only a summary of five main topics can be provided here.

1. "Excess heat" measurements in electrochemical cold fusion experiments have nothing to do with nuclear interactions but instead open the door to a minor example of the use of energy-as-a-catalyst or energy catalyzation. The energy is emerging in violation of the first law of thermodynamics. U.S. patents on other electrochemical systems showing energy-catalyst behavior include 4084375, 4317046, 5038821 and 5671905.

Commercial exploitation of this awaits development of gravitomagnetic and solvatomagnetic ferrogels that in turn must be composed of cross-linked nanocubes having rigid molecular rod edges and measuring about 500 angstroms on their sides. Such a substrate material is not yet available.

2. My views on second law violation were laid out in a pair of articles that appeared in May 2002 and May 2003 of Infinite Energy magazine. The most practical way to harness random molecular motion probably will involve viral capsids as membranes embedded in a shear thinning fluid with variable osmolality depending on stirring intensity that will transmit power hydraulically (pressure pulse from capsids upon stirring)
3. A larger artificial form of the GroEl protein complex can be used to make monofunctionalized colloids of great benefit to medical diagnostics.
4. The same artificial GroEl will be essential in making non-entangled nanocubes needed not just for making gravitomagnetic ferrogels but also extremely porous, tough, bio-compatible encapsulation structures for pancreatic cells to say nothing of solid phase reaction media, etc.
5. Specific machinery for field-automation of the installation of "artificial trees" in arrays covering thousands of square miles for mounting CO₂-absorbing equipment. The trees will be integrated into a tensegrity structure deployed by the machines. The cable structure will transmit electrical power to the absorber equipment. A small-scale mostly completed prototype machine was made a few years ago.

I conclude with this quote from Job 13:15: "Though He slay me, yet I will trust in Him."

My body is to be donated to the University of Minnesota Medical School. There will be no services.

The fundamental reason Kevin asked that this information be included in his obituary, is because he wanted people to have conversations about these very important issues. Think about ways of generating clean energy by looking at old ideas (like desktop cold fusion) in new ways. Spend more time researching how to prevent and cure various diseases with more data about fundamental biological mechanisms. Consider the implications of our fight against climate change, and start facing up to the monstrous steps we'll have to take in a few years, if we don't take the huge steps we need today.

Kevin didn't claim to have the answers to these questions. He simply wanted to spark conversations and get people thinking and working toward solutions, because he felt not enough of us were paying attention to these monumental problems. Especially since he thought many of the answers to these problems are just within our reach.

-- Kevin Varner's family

Point 1: Background: Nuclear power plants today run on a process known as nuclear fission. That's where radioactive material decays and one of the by-products is heat-energy. That heat is used to drive what is essentially a steam generator to produce power. The side effect is leftover radioactive material. That material is too weak to use for additional power but it's still highly dangerous to life, so it has to be locked away for generations leading to our current nuclear waste problem.

Nuclear fusion is the process of combining or fusing together one or more different atomic nuclei and subatomic particles (neutrons or protons). The idea is to use a large amount of energy to set off a self-sustaining reaction, which can then be harnessed for power. One of the big advantages of fusion over the current fission nuclear plants is that there would be no leftover radioactive waste to deal with.

It is important to note that fusion is only believed to be able to occur at temperatures in the tens of millions of degrees.

Currently the two leading approaches for creating a working fusion reactor are magnetic confinement (toroid designs) and inertial confinement (laser designs). In fact, a significant breakthrough was just announced when a team using lasers, changed their firing configuration to something they called “novel” that was conceptualized by a system using artificial intelligence. It was three times better than previous designs. While it was better, it was still not able to generate a *sustained* reaction that produced more energy than was put into the system.

Both fusion designs are still years from potentially generating any power, if they can be made to work in their current configuration at all.

The alternative is something referred to as “cold fusion.” For nearly 100 years, there has been speculation that nuclear fusion might be possible at much lower temperatures, by catalytically fusing hydrogen absorbed in a metal catalyst. (In other words, adding some kind of agent or “catalyst” that can fuse hydrogen without all the pressure and heat.)

Creating fusion at low temperatures would dramatically lower the cost and create a virtually unlimited power without radioactive waste or greenhouse gases.

In 1989, two researchers named Martin Fleischmann and Stanley Pons claimed they had observed cold fusion in their lab and it became a media sensation. Supposedly their apparatus produced excess heat at a level they claimed could not be explained, except in terms of nuclear processes. When other labs were unable to replicate the experiment, it was found Fleischmann and Pons had made errors in the design and measuring of their experiment. They had not discovered cold fusion after all.

After the announcement, the United States Department of Energy (DOE) looked into the results and concluded there was no evidence it was a viable source of power. The DOE reviewed the most current information again in 2004, and reached a similar conclusion. Cold fusion was not a viable area to continue investigating.

That hasn't stopped outside entities from pursuing cold fusion, which brings us to Kevin's statement. In the first sentence he correctly points out that any excess heat that comes out of electro-chemical cold fusion experiments have nothing to do with nuclear interactions. (Since there are no detectable by-products of a nuclear reaction.) He wants to make sure there are organizations or people still doing research to see if energy can be used as the catalyst to start a (clean) reaction that could be capable of

producing energy.

(A car engine is a dirty example of this process. We use the energy from a spark, to create an explosion of gas, to drive pistons and move a car. Kevin believed there may be other electro-chemical reactions that could produce energy without the pollution by-products current power plants spew out.)

Kevin doesn't describe what material(s) would be the “fuel” in this electro-chemical reaction, and when I talked with him he didn't know what might be used. What he wanted to point out in the patents he mentioned is that there are already several ways to harness the energy from any electro-chemical processes that might produce energy.

In the second paragraph Kevin mentioned that exploiting cold fusion would require advances in magnetic materials like hydrogels that contain magnetite particles (ferrogels), while mentioning two particular ferrogels, gravitomagnetic and solvatomagnetic. He believed these would provide the substrate (the material on which a circuit is formed or fabricated.)

While all that may be correct, the problem “cold fusion” researchers have is this. What the fuel could run this wondrous clean energy machine? There are plenty of ways to harness the energy, should we be able to produce it. Just right now, nobody knows what chemicals could provide the fuel.

When this information was sent to people knowledgeable in this field, they explained the problem isn't in harnessing the energy from electro-chemical processes. There are plenty of materials and engine designs that could work just fine, even on the micro or nano scale. The issue is the fuel source itself, what combination of elements could be combined to create energy that was at least as powerful as traditional fuels without the toxic waste by-products.

Point 2 was a continuation of the first point, merely speculating on ways to harness the energy from this still undiscovered clean electro-chemical fuel.

Points 3 and 4 refer to GroEL. “GroEL belongs to the chaperonin family of molecular chaperones, and is found in a large number of bacteria. It is required for the proper folding of many proteins.”

Kevin explained he was most interested in the process of protein folding. Essentially the process of proteins folding improperly is what leads to many diseases. Kevin believed that learning, and then making adjustments to how GroEL works (how it makes things fold), can cure or prevent various disease states.

Many research organizations agree with that idea and in fact several organizations are studying the human “proteome” and attempting to catalog all human proteins. However, since there are between 20,000 and 100,000 unique types of proteins within a human cell, this is going to be a very long-term project.

Research organizations working with GroEL have said they either could not talk about research currently underway or could not draw a line from their current research to the future uses Kevin hypothesized about.

Point 5: Background: The planet currently has a problem of CO₂ building up in the atmosphere. This build-up is creating a blanket over the planet, trapping heat in our atmosphere and altering the climate. There are two fundamental ways of solving this problem.

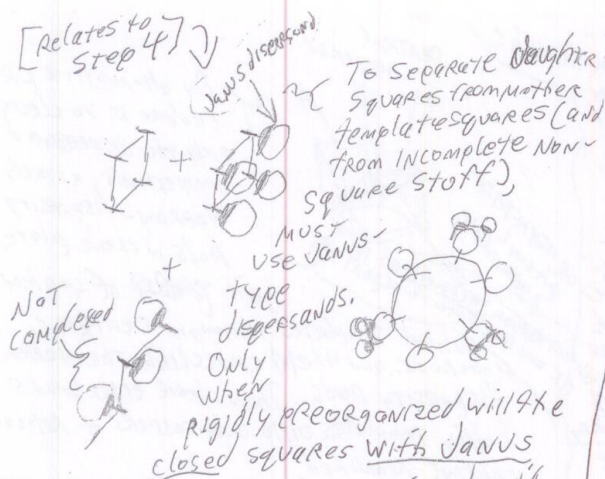
The first is to reduce the amount of CO₂ and other greenhouse gases humans release, so they fall to a level low enough for earth's ecosystems to remove it naturally. The second is to remove the excess CO₂ and other greenhouse gases found in the atmosphere and “sequester” or lock it away.

When people talk about removing CO₂ and other greenhouse gasses from the atmosphere, one of the ideas floated is to use hundreds of artificial “trees” that would be able to clean the air. Of course the most obvious and immediate problems of that would be how much CO₂ would go into the atmosphere with the construction of each tree, putting it in place and running it to capture the pollution? Would there be an overall benefit? And would we be willing to put up arrays of these “trees” potentially covering hundreds (or thousands as Kevin speculated) of square miles?

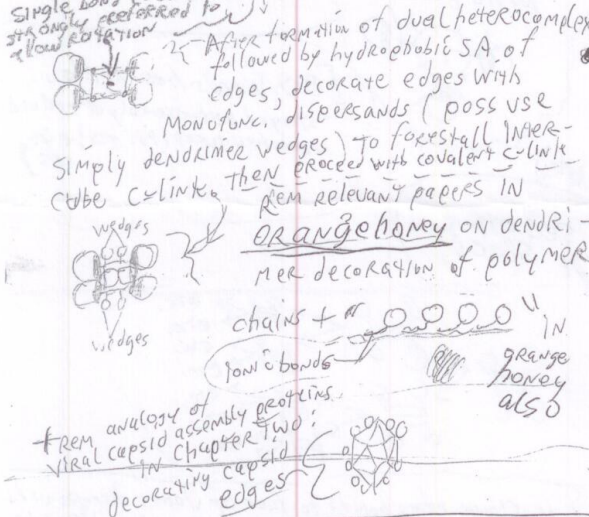
So Kevin approached the idea from a tree-installation point of view. He designed a machine that could be used to automatically “plant” the “trees” much like a piece of farm equipment that plants seeds in the ground. He built a proto-type of the artificial tree “planter” and it's currently in the custody of his siblings.

Of course the practicality of this machine depends on IF we decide to use artificial trees and what form factor those tree might eventually take.

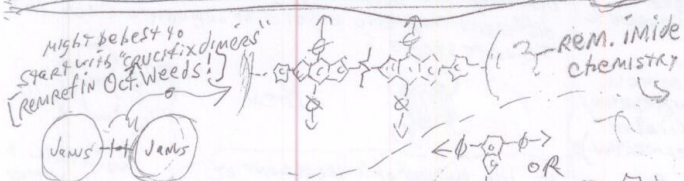
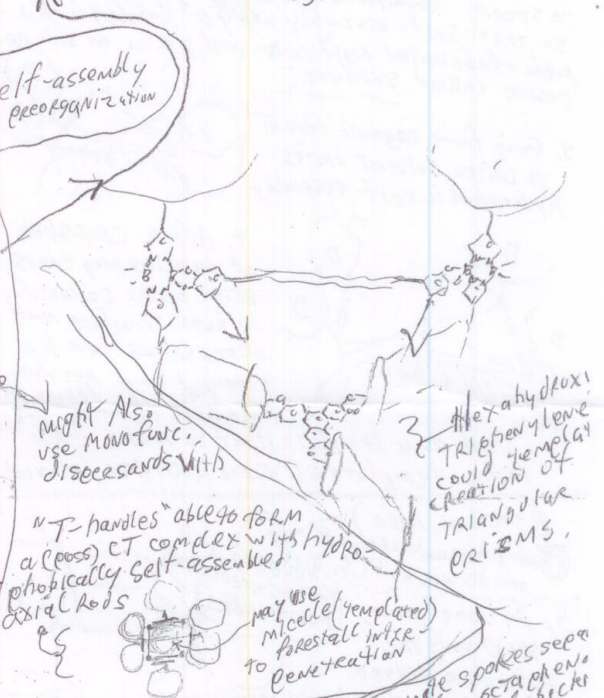
[Relates to Step 4]



cooperativity in water honey gets here (in addition there is self-assembly on preorganization)
Single bond connection
Prob better concept:
After formation of dual heterocomplex followed by hydrophobic SA of edges, decorate edges with monofunc. dispersands (poss use simply dendrimer wedges) to forestall intercube c-link. Then proceed with covalent c-link.



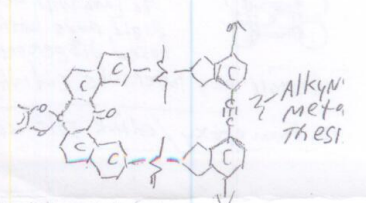
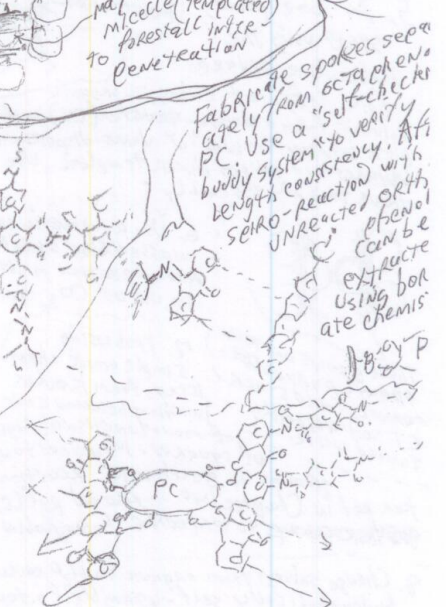
Based on ref from Neon Bull, use of bulky enzy ZMS for C-link of pendant groups could provide a self-shielded/inherently gelation-resistant process [no PDF/111 citis (seen)] → "Enzyme-catalyzed polymerization to functional polymers" (H. Uyama and S. Kobayashi) Mol. Catal. B. Enzym, Vol 19-20, 117-127 (2002) +
From Fig. 15 in the following PDF-available Review article: "Catechols as versatile platforms in polymer chemistry" (E. Fauré et al.) Prog. Polym. Sci., Vol 38, 236-270 (2013) [278 refs]. The enzyme horseradish peroxidase (with other additions) can be used to prepare the products shown + [no PDF 321 citis] → "Enzymatic polymer synthesis: An opportunity for green polymer chemistry" (S. Kobayashi et al.) Chem. Rev. (2009).



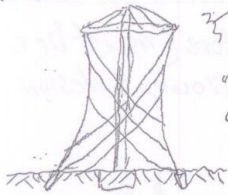
1. Create T-shaped branches
2. Dimerize
C-link between ends of TS (note arrows)
Dimeric intermediate groups are forced to stay axial
3. Uncouple from Janus colloids and filter out incomplete stuff

Spacer frame template (a type of ladder polymer)

4. [Go to "Step 4" on other side!]

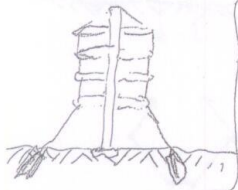


4148850: "SUPPORTING STRUCTURE FOR LARGE NATURAL DRAFT COOLING TOWER" (ass. to a German company). Shows:



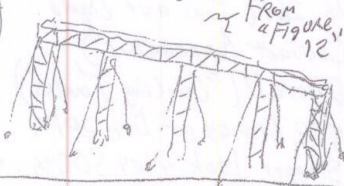
Central tower supports a ring held by inclined radial cables that enable diagonally inclined mantle supporting cables to be attached forming a grid to which rigid structural panels are attached.

4520600: "STACKS OR VERTICAL PIPES FOR THE FLOW OF GAS" (ass. to a French company). Shows:

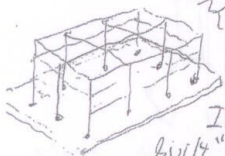


SUPPORTS "STEAM SUPPLY PIPES"

8235363: "AIR-COOLED HEAT EXCHANGER WITH HYBRID SUPPORTING STRUCTURE" (ass. to SpX Cooling Technologies, Inc.) Shows (in part):



From Figure 12



FROM FIGURE 21 IN 5902522: "Rigid cooling tower and method of constructing a cooling tower" (ass. to Baltimore Aircoil Comp., Inc.) shows the essentially "stick-built" frameworks of such structures.

Such frameworks do not lend themselves to automated field manufacture.

The same can be said for another rectangular-framed structure embodied in 4543218: "Cooling tower with concrete support structure, fiberglass panels, and a fan supported by the liquid distribution system" (ass. to Ceramic Cooling Tower Company). Yet one more such design is seen in 5236625: "Structural Assembly" (ass. to BAC Pritchard, Inc.) that discloses yet another stick-built cooling tower.

Ditto → 8628066: "Cooling Tower and Method of Constructing Same" (K. M. Boyd, inventor)

[CO₂ absorbers] → 7635193: Not of great interest; aqueous processes carbonates

592,000 hix/Dec 2017 → "Carbon Engineering" [David Keith founder of Canadian company]

There is a YouTube video on the Lackner adsorbent that releases CO₂ upon moisture exposure

"Climate Works adsorbent" → 9751039 mentions porous material based on "amine-modified Nanofibrillated cellulose". Has ~20 citation entries of great interest (including a Lackner patent) N. S. V.!!

A primary inspiration for the proposed scheme (in which guyed vertical towers are erected using automated machinery followed by installation of prefabricated CO₂ extraction units) can be found in 5227095: "Modular Cooling Tower" (ass. to Harold D Curtis, inventor). This patent specifies forced-draft box-like units of a size transportable by flat-bed truck. Said units have "an integral one-piece frame... preferably constructed from molded fiberglass".

It is of strong relevance to the sought-after objective (air extraction of CO₂ on a massive scale) to quote from this patent the clear advantages to the invention described within:

"The present invention provides a modular construction cooling tower made up of a plurality of individual modules."

"Industrial cooling towers typically are very large structures having lateral dimensions on the order of twenty to one hundred feet and [have] a height on the order of twenty to thirty feet. Such structures are built at the field site. Typical delay between the time of order and the time of completion of an industrial cooling tower is on the order of one year. The construction of such a tower is a major undertaking."

"Although relatively small towers have been built which could be transported to the field site, for example some rooftop towers used for the mechanical systems of office buildings... there has never been a successful modular cooling tower system whereby individual modules of a size that can be readily transported are prefabricated in a factory and then easily assembled at a field site...."

"In addition to the reduced cost, a much-improved quality of cooling tower is provided because of the quality controls which are practicable in a factory environment as compared with the lack of quality control present in individual custom built field erected cooling towers."

A strongly related patent (by the same inventor as above) relevant to circumstances herein can be found in 5487849: "Pultruded cooling tower construction" (ass. to Tower Tech, Inc.). The abstract of this patent has the following relevant comments:

"A modular cooling tower apparatus is formed from plurality of pultruded fiberglass structural members.... The overall height of the assembly from the bottom unit to the top of the unit is less than eleven feet thus allowing transportation by conventional trucking equipment."

Prior art related to the above is described in 6250616 "Molded Cooling Tower" (ass. to Delta Cooling Towers, Inc.) and 4637903: "Lightweight Cooling Tower" (ass. to Ceramic Cooling Tower Company). The latter patent describes use of "fiberglass reinforced polyester resin structural components".

My Birthday Letter-Essay : Fact Today, Folly Tomorrow / Folly Today, Fact Tomorrow ©2014 KEVIN VARNER

IN this letter I will be laying it on really thick when it comes to cherry-picked comments from "quotable Notables". The initial quote in my verbal collage can actually be considered a capsule cautionary tale concerning overreliance on external opinions. The following words were written by EMERSON:

"A man should learn to detect and watch that gleam of light which flashes across his mind from within, more than the lustre of the firmament of bards and sages. Yet he dismisses without notice his thought, because it is his. In every work of genius we recognize our own rejected thoughts; they come back to us with a certain alienated majesty [emphasis mine, K.V.]..... Tomorrow a stranger will say with masterly good sense precisely what we have thought and felt all the time, and we shall be forced to take with shame our own opinion from another."

Nevertheless, for the bulk of this letter, I will continue to offer samples of what EMERSON refers to as "alienated majesty", as shameful as that may be.

IN the context of my advancing age, the following lines from DOROTHY PARKER seem appropriate:

It costs me never a stab nor squirm
To tread by chance upon a worm.
"Aha, my little dear," I say,
"Your clan will pay me back one day."

IN my opinion the above verse crystallizes the motivation as to why many in our nation prefer cremation over "fossilization". Many are uneasy at the thought of becoming worm food.

A verse expressing a related sentiment was authored by WALT WHITMAN:

"I bequeath myself to the dirt to grow from the grass I love.
If you want me again look for me under your boot-soles."

From here we go from Death with a capital "D" that rhymes with "T" that stands for taxes (two things nobody can avoid).

The following lines from George Washington's Farewell Address seem to tell us that the more things change, the more they stay the same:

"As a very important source of strength and security, cherish public credit. One method of preserving it is, to use it as sparingly as possible; avoid occasions of expense by cultivating peace, but remembering also that timely disbursements to prepare for danger frequently prevent much greater disbursements to repel it..... The execution of these maxims belongs to your representatives, but it is necessary that public opinion should cooperate. To facilitate to them the performance of their duty, it is essential that you should practically bear in mind, that towards the payment of debts there must be revenue; that to have revenue there must be taxes; that no taxes can be devised which are not more or less inconvenient and unpleasant....."

I wonder what GW would think about the folly-fact that 40% of the Federal budget is borrowed money. Last I heard anyway.

Something that has changed very much over the years is the degree to which many in America feel alienated from the majestic ones who rule over us. The following George Washington anecdote supplies evidence for this. It is clear that no big Secret Service watchers and guardians were needed at the start of our country:

"Walking in Philadelphia with an American acquaintance, an English visitor expressed a wish to see President Washington. A few moments later, the President happened to pass the two men on the opposite side of the street. Pointing at the solitary figure the American said, 'There he goes'. The Englishman was surprised. 'Is that President Washington?' he exclaimed. 'Where's his guard?' The American struck his breast proudly: 'Here!', he declared."

By this time you are probably wondering: "Whoa! Where's all this quote-stuff coming from?" Let me say simply that a major source of material are periodic book sales at local libraries (Mora, Milaca, etc.). It is simply amazing the stuff people are basically giving away. Hardbacks sell for 25¢ and softcovers for 10¢. Yes, that cheap!

The balance of what remains of this letter-essay will concern information I have come across from my book reading. As Groucho Marx said:

"Outside of a dog, a book is a man's best friend. Inside of a dog, it's too dark to read."

An especially famous book I have seen offered at library book sales is J.D. Salinger's "A Catcher in the Rye". After suffering through its pages by reading Salinger's rag (it's a profane thing/maybe one or two swear words per page) I concluded that it is a wandering, pointless and uninspiring farce. There were two practical things I extracted from this novel:

Firstly, as soon as I got done with it, I tossed it into my woodstove where-upon it kept the house a few millidegrees warmer for a few minutes. The second thing is more intangible yet much more profound in that it is a lesson as to the degree to which people can be bamboozled into thinking trash is a form of majesty. Wikipedia tells us that ~250,000 copies of "CITR" are sold every year with total sales of >65 million copies. There can hardly be a better example of the old saying: "There's no accounting for taste!"

Another book that bends the needle in the over-hype department is Alan Bloom's "The Closing of the American Mind". It's been a while since I read it, but I certainly recall that there was nothing really mondo-profoundo about it and in fact you could skip (at least) every other page of Bloom's mumblings and not miss a thing.

Something that Bloom is reported to have said that actually is very profound (and that will serve as a lead-in for the next review of a certain especially famous book) is the following:

"Freedom of the mind requires not only, or not even specially, the absence of legal constraints but the presence of alternative thoughts. The most successful tyranny is not the one that uses force to assure uniformity but the one that removes the awareness of other possibilities" [emphasis mine, H.V.]

A few years ago I found a 25¢ hardcover copy of Darwin's "The Origin of Species" in a large cardboard box containing a number of other so-called "Harvard Classics". This was at a library book sale in Mora. Time finally became available for me to read through it. I have to tell you that up until a few years ago you could describe me as a "get-along/go-along" evolutionist. In other words, yeah, sure people came from monkeys (somehow), etc., etc. Sometimes I would actually dwell (for a few minutes) as to just exactly how a whale could evolve or emerge from a hippo-like precursor creature that existed ~50 million years ago. Like, I mean, how did the blowhole thing happen? One might suppose it has to be either all there or the intermediate "missing link" creature is fatally nowhere. But I just figured The Big Scientists had that all nailed down and anyway biological science is not my strongest subject.

My reading of Darwin's book has caused me to conclude that even in supposedly evidence-based science, the "hype-monster" remains alive and well. When I got done with it, it left me thinking: "Where's the beef?"

Overall, Darwin never proved anything. No, really! I'm serious! I now see why his editor is reported to have advised him to retitile his work "How to Breed Pigeons" (or something to that effect). Darwin's limited vision

(in practical terms) is about as useful as Ptolemy's perfect circle epicycle description of planetary motions.

Certainly, you have to cut the guy some slack in that he knew nothing of DNA, proteins, enzymes, lipid membranes, and all the other molecular bio-stuff. On page 166 Darwin himself confesses: "Our ignorance of the laws of variation is profound. Not in one case out of a hundred can we pretend to assign any reason why this or that part has varied." But there is a lot more to pick at.

To get back to the hippo/whale thing, Darwin further says (from page 175 in a chapter titled "Difficulties of the Theory"):

"It has been asked by the opponents of such views as I hold, how, for instance, could a land carnivorous animal have been converted into one with aquatic habits; for how could the animal in its transitional state have subsisted?"

In the same chapter, on page 185, a more generalized extension to the above statement is made:

"If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down."

On various pages in "The Origin of Species", Darwin admits to further little snags. From pages 221 and 224 come the following gems:

".....if natural selection be so potent, and if high browsing be so great an advantage, why has not any other hoofed quadruped acquired a long neck and lofty stature, besides the giraffe.....?"

"Why, in other quarters of the world, various animals belonging to this same order have not acquired either an elongated neck or a [elephant-like] proboscis, cannot be distinctly answered....."

"Lastly, more than one writer has asked, why have some animals had their mental powers more highly developed than others, as such development would be advantageous to all? Why have not apes acquired the intellectual powers of man?..... A definitive answer to the latter question ought not to be expected....."

The statement that really lights a fire under my tail section, and which has caused me to actively embrace views "Beyond Darwin" have to do with what might be termed "Rube Goldberg-style" biological paradoxes in which the whole "which-came-first-the-chicken-or-the-egg" routine is almost a sideline issue.

For example, from page 234 Darwin says:

"There is no greater difficulty.... than in understanding how unhatched chickens have learned to break the egg-shell by tapping against it with their specially adapted beaks; or how a few hours after leaving the shell they have learnt to pick up grains of food."

Additional Rube Goldberg-style issues (in which if a single link in a chain-mechanism is missing then the whole show hits the fan) can be found laid out on pages 194 and 195 of the Darwin book. Described are intricate fertilization sequences in two disparate brands of orchid-flowers.

The Rube Goldberg hangup has only gotten much worse. Three books provide amplification on this.

I really like the deep detail given in Appendix C of Michael Behe's book "The Edge of Evolution" (© 2007 Free Press, A division of Simon and Schuster) concerning the almost impossibly intricate self-assembly process involved in constructing a bacterial flagellum motor. And it really is an actual spinning-type motor in which the whip-like flagellum acts as a propeller. One thing I especially like about his narrative is the molecular-level Rube Goldberg function of a protein he nicknames "Twinkletoes" that is needed toward the end of the fabrication process. If you want I can copy the relevant pages in the Behe book and send them to you to read. A further info source is to look in Wikipedia under "flagellum". There is also an Internet-available video relevant to this from Japan's Osaka University under the heading "Protonic Nanomachine Project".

Before moving on, I should point out that Michael Behe is one of the top experts in the world on hemoglobin, in addition to his many other qualifications. Biological science is certainly a strong subject for this guy. On page 16 he expresses wonderment as to why the bug that causes malaria (basically a hemoglobin/red cell infection) failed to expand its deadly franchise into nontropical higher latitudes. What is stopping it from evolving and spreading? Also, I would like to give (from page 102 of his book) the following paragraph that encapsulates his overall viewpoint, at least in my opinion:

"The structural elegance of the [flagellum] cilium, the functional sophistication of the pathways that construct them, and the total lack of serious Darwinian explanations all point insistently to the same conclusion: They are far past the edge of evolution. Such coherent, complex, cellular systems did not arise by random mutation and natural selection, any more than the Hoover Dam was built by the random accumulation of twigs, leaves, and mud."

The next book to be cited in this letter-essay was written by a couple of guys who describe themselves as "...outright, card-carrying, signed-up,

died-in-the-wool, no-holds-barred atheists". The book's title is "What Darwin Got Wrong" (©2010, 2011 / available from Picador of N.Y., N.Y.) and its authors are Jerry Fodor and Massimo Piattelli-Palmarini. This book proves that there really must be a problem with classical stepwise evolution as promoted by MR. Darwin if actual atheists are getting all upset. In the preliminary section titled "Terms of Engagement", the authors accept the prospect of being thrown into the same slot as the Bible-thumping creationist boneheads who think the dinosaurs were on Noah's Ark:

"We've been told by more than one of our colleagues that, even if Darwin was substantially wrong to claim that natural selection is the mechanism of evolution, nonetheless we shouldn't say so. Not, anyhow, in public. To do that is, however inadvertently, to align oneself with the Forces of Darkness, whose goal it is to bring Science into disrepute. Well, we don't agree. We think the way to discomfort the Forces of Darkness is to follow the arguments wherever they may lead, spreading such light as one can in the course of doing so. What makes the Forces of Darkness dark is that they aren't willing to do that. What makes Science scientific is that it is".

A prime "Rube Goldberg syndrome" connected with the incredible instinctive behavior of a certain type of stinging wasp that preys on cockroaches is of primary interest in this book. It spans pages 89-91 and if you request it, I can send you a copy. At one point in its attack, the little wasp takes the "zombified" cockroach by one of its antennae like a dog on a leash. How did it learn to do that?

It is fully justified that the authors of "What Darwin Got Wrong" declare that there is "a lot of tunnel at the end of the light".

The third book to be noted after Darwin's concerns an inconvenient truth that Darwin was quite aware of: The so-called "Cambrian explosion" that occurred something like half a billion years ago in which the major animal groups that persist to this day "suddenly" appeared (at least within a 5-6 million year span). As pointed out by author Stephen C. Meyer in "Darwin's Doubt" (©2013 / available from Harper Collins of N.Y., N.Y.) where did the information come from to concoct such biological complexity? I can imagine a proto-Rube Goldberg taking in the Cambrian events and then declaring: "Holy Eureka Batman!"

A quote from page 318 pinpoints the issue as presented to mankind by the inescapable fossil record:

"We are still in the dark about the origin of most major groups of organisms. They appear in the fossil record as Athena

did from the head of Zeus - full blown and Raring to go, in contradiction to Darwin's depiction of evolution as resulting from the gradual accumulation of countless infinitesimally minute variations."

Meyer's interest in and qualifications for writing Darwin's Doubt is probably easy to understand: According to the jacket blurb, he received his Ph.D. from the University of Cambridge in the philosophy of science after working as an oil industry geophysicist.

In the Prologue of this book, Meyer makes clear he is not the only scientist doing some very deep rethinking of Darwin's classical evolution:

"Some leading evolutionary biologists, particularly those associated with a group of scientists known as the 'Altenberg 16' are openly calling for a new theory of evolution because they doubt the creative power of the mutation and natural selection mechanism."

The importance of this group (they met in the summer of 2008 at a private conference at the Konrad Lorenz Institute in Altenberg, Austria) is underscored by the fact that an entire book has been written about them: "The Altenberg 16: An Expose of the Evolution Industry" (©2010, Suzan Mazur, North Atlantic Books, Berkeley, CA).

I have not yet read the Mazur book (I don't have near enough time to read 10% of all the things I should read) but perhaps it doesn't matter that much since many of their ideas as to how best to move on from Darwinian evolution are laid out in the Meyer book. Their ideas turn out to be - in my opinion - quite stunningly limited if not actually backward. It would not surprise me that this group goes down in scientific history as a fraternity of the henpecked in their attempts to fabricate skyscrapers from the dust of outworn creeds.

For example, one of the Altenberg 16 participants promotes something called "self-organization". The details need not be relayed here. Meyer says (convincingly, I think) that this gets into a lot of "question-begging" and generally does not cut to the deep origin problem. This line of attack reminds me of so-called "fuzzy logic" for computers as a way to make them seem to think. The whole trouble is, somebody always has to come in and tell the logic where to be fuzzy before the computer is switched on. We get into an infinite-regress paradox with fuzzy logic.

Other Altenberg 16 brainstormings include "macromutations" which is another way of saying that millions of years ago a dinosaur laid an egg that hatched as a bird. This writer would ask: "Where is there even one experimental demonstration that a culture of single-cell *E. coli* can (after churning and fermenting for thousands of generations) suddenly become a *Salmonella* bug

OR any other type of bacteria?" It has never been shown in any laboratory culture - even at the single cell level - that interspecies "jumping" can occur. You can take that to the bank, roll it up, and smoke it.

One more idea is to revive the ghost of a guy named Lamarck who proposed that environmental influences can drive heredity. This is like saying that if you cut the tails off cats or pigs or any other animal, eventually, somewhere down the road, all of a sudden tail-free kitties and piggies will start being born. They dress up their arguments in terms of "epigenetic methylation of DNA" but, at best, they have their work cut out for them. In my always-humble opinion: Back to the drawing board!

So where does the path to some kind of answer exist? Where are Scientists supposed to look? Any future "nonclassical evolution" theory must explain why Mother Nature somehow causes the genetic "Popeye" of an initial species to eat its "spinach" and turn into a new and functional species. In relation to this, it is worthy of note that in the Behe book ("The Edge of Evolution"), on pages 70-72 he fully broadcasts the fact that chimpanzee and human hemoglobin are nearly identical. But in the end he leaves us with the ultimate issue which is: Where did the information come from that caused chimps to become human?

In the paragraphs that follow, this writer will propose some novel pathways that seem not to have been explored. There is no choice; the proverbial "low hanging fruit" is used up. You can say I have no qualifications for doing so but under some circumstances this could be an advantage. I am untrained and therefore I am unchained. Too many "highly qualified" people are trained to the point of being brainwashed techno-zombies. A new broom sweeps clean.

On page 177 of the 2010/2011 "What Darwin Got Wrong" book, we encounter a quote from a certain Professor of Ecology and Evolutionary Biology at Princeton University by the name of Leonard Kruglyak (reprinted from Nature, Vol 456, Nov. 6, 2008, page 21) that can be taken as an endorsement of post-Darwinism Novelty-viewpoints:

"It's a possibility that there's something we just don't fundamentally understand, that it's so different from what we're thinking about that we're not thinking about it yet."

One point-of-entry on the problem might be to propose that molecules can think. A baseline example is the Nitrogenase enzyme. It has been known for decades that Nitrogenase (responsible for "fixing" nitrogen by transmuting it into amino compounds) not only recognizes the triple-bonded $N \equiv N$ system but also has an affinity for other triple-bonded simple

molecules. These include carbon monoxide ($C\equiv O$), acetylene ($H-C\equiv C-H$), and hydrogen cyanide ($H-C\equiv N$).

More complex molecules could recognize proportionally more complex shared patterns and also - perhaps - sequential steps in the processing of molecules.

The role of RNA (a relative of DNA) needs much deeper elaboration. I am aware of scientific papers that tie together the intelligence-cognition problem with the intelligence-genetics/evolution issue. One such paper is "RNA editing, DNA recoding and the Evolution of Human Cognition" (J.S. Mattick et al.) Trends in Neurosciences, Vol 31, 227-233 (2008). This paper is supposed to suggest that environment-induced editing of RNA can be back-transcribed to DNA and thereby encoded into the genome of future generations.

RNA-based evolution-intelligence and RNA-based cognitive intelligence might turn out to be different sides of the same coin. It might be that one or more of the papers below could serve as a springboard toward such a unification: "Dark Matter RNA: Existence, Function, and Controversy" (P. Kapranov and G.S. Laurent) Frontiers in Genetics, Vol 3, April 23, 2012 + "RNA as the substrate for epigenome-environment interactions" (J.S. Mattick) Bioessays, Vol 32, 548-552, July 2010 + "Regulation of noncoding RNA networks in the Nervous System - What's the REST of the Story?" (I.A. Qureshi et al.) Neuroscience Letters, Vol 466, 73-80 (Dec. 2009) + "Non-coding RNA's: Couplers of Analog and Digital Information in Nervous System Function?" (G.S. Laurent et al.) Trends in Neurosciences, Vol 30, 612-621 (Dec. 2007). The abstract to this last paper says (in part) the following: "This emerging panorama might open new dimensions [in] information processing in the nervous system".

Before continuing, let me pull up short and let at least one other person weigh in with some comments relevant to my "thinking molecules" proposition. We have here a situation where, it would seem, there is nothing so bizarre that somebody, somewhere has not already thought of it.

The paragraphs that follow originate from a book published by Atlas and Co. (© 2008) titled "Year Million. Science at the Far Edge of Knowledge" (edited by Damien Broderick). This book is an anthology-collection of idea-provoking speculations concerning the far, far future (at least in human terms). These futurist speculations are organized into a series of chapters, I will be quoting from Chapter 11 (specifically pages 237 and 240) titled "The Great Awakening". This chapter was written by Rudy Rucker, a novelist and emeritus professor of mathematics at San Jose State University. He insists that molecules are not dumb:

"Matter, just as it is, conducts outlandishly complex chaotic quantum computations by dint of sitting around. Matter isn't dumb. Every particle everywhere and every when computes at the max possible flop. I think we tend to very seriously undervalue quotidian reality".

"In the future, we'll see all objects as alive and conscious - a familiar notion in the history of philosophy and by no means disreputable. Hylozoism (from the Greek hyle, matter, and zoe, life) is the doctrine that all matter is intrinsically alive, and panpsychism is the related notion that every object has a mind".

As the Roman era writer Lucretius told us long ago: "So far as it goes, a small thing may give analogy of great things, and show the tracks of knowledge".

And while I am on this subject there is at least one more quote that applies here from a guy by the name of Shakespeare:

"And in such indexes, altogether small pricks
To their subsequent volumes, there is seen
The baby figure of the giant mass
Of things to come"

Working in parallel with respect to a theory of "panpsychic" mindfulness on the part of RNA, it would also not hurt anything to try and identify some kind of higher-order theory of information that would be broad enough to support connections between evolution-intelligence and cognitive intelligence. Currently, we are stuck in a rut with the Claude Shannon noises that first appeared in the Bell System Technical Journal ["A Mathematical Theory of Communication", Vol 27, 379-423 (1948)].

Getting cognitive and evolution intelligence on "the same page" could be seen as yet one more example of unifications in science: The interchangeability of mass-energy embodied in Einstein's $E=mc^2$, wave-particle duality in quantum mechanics and electromagnetism in which moving electrons create magnetic fields and moving magnetic fields drive electrons.

At this stage of my/our ignorance, it just might be the case that some scientist has already published a key paper relevant to what might be called "nonclassical information theory". I reproduce here one reference listed in the bibliography of "Darwin's Doubt" that might qualify: "Quasi-Independence, Homology and the Unity of Type. A Topological Theory of Characters".

(G.P. Wagner and P.F. Stadler) *Journal of Theoretical Biology*, Vol 220, 505-527 (2003).

We must consider the idea that the TRUE root of any future non-classical information theory ~~currently~~ lays unpublished in the dusty files of some over-the-hill grad student, having been rejected as too "outside-the-box" by all the peer-reviewed journals. Perhaps in another century it will be rediscovered and then published. In such a case, the following words by the Latin poet Horace (who lived ~2000 years ago) will apply:

"Many brave men lived before Agamemnon; but all were overwhelmed in eternal night, unwept, unknown, because they lacked a sacred poet."

While we are on this subject, it has been pointed out in more recent times by John Stuart Mill that with respect to the rise of Martin Luther and the Christian Reformation, there were many "pre-Luthers". Examples given (in his essay titled "On Liberty") include Arnold of Brescia, Savonarola, and the Lollards. Ever hear about those guys? Me neither. The big advantage Martin Luther had (and I think a reading of history will confirm this) is that unlike the earlier crowd, he had access to Gutenberg's printing press invention.

A future cornerstone of nonclassical evolution theory that very definitely qualifies as being outside-the-box is the possibility of molecular-level utilization of so-called "retro causation" or "reverse causation" that (according to some scientists) is allowed on the quantum level. These terms are the same as saying that future events can influence the past. I have identified scientific papers that deal with this:

"Reverse Causation - EPR Communication: Signals from the Future?" (J.G. Cramer) *Analog Science Fiction and Fact*, Dec. 2006 + (A. Zeilinger) *Reviews of Modern Physics*, Vol 71, S-288, S-297 (1999). This issue overlaps with general studies of time symmetry in quantum mechanics as explored in decades-old papers by Aharonov [see *Physical Review B*, Vol 134, 1410 (1964)]. Perhaps it is permissible - under the right quantum-level conditions - to think of the future "pulling" the past instead of the past "pushing" the future.

On page 10 of "What Darwin Got Wrong" we encounter the following statement: ".....evolution can't think to itself 'frogs would catch still more flies if they had longer tongues' and thence lengthen the frog's tongue in order that they should do so." I propose that this assumption quite possibly

could be wrong. Perhaps a future theory of nonclassical evolution will show that evolution can think!

The actor and playwright Wallace Shawn (still alive at the time of this writing, unlike many of the quotable Notables so far provided) would probably find a strong kindred spirit identification with the words in the previous couple of paragraphs since Shawn is responsible for the following statement:

"It's the same with any kind of prophecy or sign or an omen, because if you believe in omens, then that means the universe - I mean, I don't even know how to begin to describe this. That means that the future is somehow sending messages backwards to the present! Which means that the future must exist in some sense already in order to be able to send these messages. And it also means that things in the universe are there for a purpose: To give us messages." [emphasis in original, K.V.]

Nietzsche gave us a similar message in the present context:

"Our destiny exercises its influence over us even when, as yet, we have not learned its nature: It is our future that lays down the law of our today."

Yet one more philosopher (T. S. Eliot) offered related lines:

"Time present and time past
Are both perhaps present in time future
And time future contained in time past"

At this stage of the game, I can easily imagine any "respectable" scientist accusing Varner of introducing a few too many "occult qualities and miracles". To any such fingerpointing I respond by saying that I am in good company. In the chapter titled "Recapitulation and Conclusion" on page 497 toward the end of "The Origin of Species", Darwin himself wrote:

"It is no valid objection that science as yet throws no light on the far higher problem of the essence or origin of life. Who can explain what is the essence of the attraction of gravity? No one now objects to following out the results consequent on this unknown element of attraction; notwithstanding that Leibnitz formerly accused Newton of introducing 'occult qualities and miracles' into philosophy."

Robert Frost, in his poem titled "Range-Finding", offers a metaphor with respect to short-sightedness, a philosophy Leibnitz and his fellow-travellers share, even to the present moment:

".....straining [web] cables wet with silver dew.
A sudden passing bullet shook it dry.
The indwelling spider ran to greet the fly,
But finding nothing, sullenly withdrew".

In the above verse, the bullet is much more important than the fly. However, the spider was only "tuned" to look for a fly and finding none, went back to the spider equivalent of its cloistered ivory tower.

The views expressed in this essay concerning urgent upgrades to evolution will certainly be dismissed by the current generation of educators as a different variation on the theme of Intelligent Design (too often lumped-in with creationism I might add). In their view, only reason can rule the world, a totally despiritualized vision that falls under the heading of "Logical Positivism" or "materialism". A primary advocate of this latter-day Golden Rule is a person by the name of Richard Lewontin, a Harvard geneticist. Page 386 in "Darwin's Doubt" provides a quote from this professor/educator:

"We take the side of science in spite of the patent absurdity of some of its constructs, in spite of its failure to fulfill many of its extravagant promises of health and life, in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism..... Materialism is absolute, for we cannot allow a Divine Foot in the door".

A counterpoint perspective on the hollowed-out opinion expressed in the above unfortunate paragraph is provided by the following quote from pages 265-266 of an exceptional book titled "Galileo's Mistake" by Wade Rowland (© 2001/Arcade Publishing, Inc. of New York):

"From the perspective of the early twenty-first century, it seems clear that while much was gained in the unleashing of science, much was lost as well. For the freedom science offered through theoretical knowledge and material wealth we have paid a heavy price in the loss of any spiritual context for existence and in enslavement to the day-to-day exigencies of technology. We have become commodities, shaped and molded

from infancy to meet the requirements of an economy run increasingly on the purest of scientific, materialist principles. Governments are increasingly powerless to protect their citizens from the excesses of economic demands, because they no longer have an unarguable moral authority on which to build the necessary political consensus. And because science has bequeathed to us the unmitigated power to destroy our habitat, we are doing so, rapidly. Aristotle, I think it is safe to say, would have considered the vast majority of us little better than slaves. Socrates, too, would have thought us sorry specimens, mired in base material obsessions:

At this point, I want to get back to the motivation behind the title of the book ("Galileo's Mistake") that the above statement came from. Digging into this provides lessons for our modern era.

To summarize Rowland's research (his book spans nearly 300 pages), it is a fair thing to say that MR. Galileo was a "charm school dropout". He got a little too smug and he irritated a critical mass of powerful people by shooting his mouth off. A quote from an observer of Galileo from page 144 gives elaboration:

"He [Galileo] is all afire in his opinions, and puts great passion in them, and not enough strength and prudence in controlling it; so that the Roman climate is getting very dangerous for him, and especially in this century is for the present Pope [Paul the 5th], who abhors the liberal arts and his kind of mind, cannot stand these novelties and subtleties...."

Nevertheless, even Dale Carnegie Rejects can hit the nail on the head as proven henceforth:

"Nature.... is inexorable and immutable; she never.... cares a whit whether her abstruse reason and methods of operation are understandable to men..... Nothing ever changes in Nature to accommodate itself to the comprehension or notions of men."

A major influence behind the above statement had to be a two-fisted sample of Mother Nature's alienated majesty that occurred in 1572 and 1577 as described on pages 37-38 of Rowland's book:

"When Galileo was a child of eight living in Pisa, the first of two events occurred that shattered the accepted conceptions of the universe. They made it impossible for astronomers any longer to believe in the solid crystalline spheres on which the planets rode,

OR in the idea of an eternally unchanging cosmos. In 1572 a new star appeared in the sky - a supernova - and for more than a year it was so bright as to be visible in daylight. This was clear evidence that the heavens were not immutable as Aristotle and Ptolemy had claimed, but were subject to change. And then in 1577, when Galileo was a youth of thirteen, an exceptionally bright comet traced a path across the skies, following a course that the great Danish astronomer Tycho Brahe was able to determine as well beyond the Moon's orbit, possibly as remote as Venus....."

"Historians have suggested that these events did more to shake the foundations of the belief in the Ptolemaic - Aristotelian cosmos than the publication of Copernicus' [heliocentric] hypothesis. Certainly they would have been seen, and remembered, by Galileo."

I would like to draw an analogy between the above-described 16th century supernova + comet and the previously noted summaries of biological nano-events reported in our 21st century. By way of reminder, I refer to Behe's meticulous description of bacterial flagellum motor self-assembly in Appendix C of his book and the molecularly-programmed Robe Goldberg attack sequence of the stinging wasp laid out on pages 89-91 of the atheist-authored book, "What Darwin Got Wrong". If only the public had a greater awareness of these things that classical evolution cannot begin to explain. These and related biological issues could topple Darwin into the same junkpile now occupied by Ptolemy and Aristotle. Unfortunately, prospective modern-day Galileos cannot easily see these facts of Nature. So far, the current situation is best described by the earlier quote from Alan Bloom in which the most successful tyrannies are those that remove the awareness of other possibilities.

At this point, I have decided to include here a quote from Russian writer Solzhenitsyn's June 1978 Harvard speech. It supplies reinforcement for Bloom's comment. MR. Solzhenitsyn was only too aware of the idea-stomping power of political tyranny. Scientific-academic tyranny has a similar capacity:

"Without any censorship.... fashionable trends of thought and ideas are carefully separated from those which are not fashionable; nothing is forbidden, but what is not fashionable will hardly ever find its way into periodicals or books or be heard in colleges."

It is amazing to look back at history to see how the scientific ~~zeitgeist~~ arrogance "fashion-pendulum" has swung when it comes to explaining the forces of Nature. Only a few centuries ago it was "known" that the

planets were maintained in motion by the rattletrap idea of "ether vortices" and now we have our well-greased laws of motion and gravity that fully displace the old crystalline sphere fuzziness.

The gravity theory of Einstein (a.k.a. general relativity or GR) introduced about a century ago, clears away the "occult qualities" of Newton's Universal Gravitation. GR maintains a dualistic viewpoint in which curved/warped spacetime "tells" matter how to move and (conversely) matter "tells" spacetime how much to curve or warp. Of course, the tools Einstein used to create his theory (Non-Euclidian geometry and tensor algebra) did not exist in Newton's time. In an analogous way, it is quite likely the case that the tools for explaining the obvious well-greased intelligence of evolution (such as some sort of nonclassical information theory) probably do not yet exist, And intelligence is indeed the operative word.

A key consideration in need of resolution is this: Are we talking about lower case "i" intelligence or upper case "I" Intelligence? Or will mankind come to the conclusion that the best way forward is to admit that it must be a mixture of both? It was Martin Luther himself who wrote:

"Human Reason is Like a Drunken Man on Horseback; get it up on one side and it tumbles over on the other".

There are those who consider classical/Darwinian evolution to be a kind of secular religion: "Is Evolution a Secular Religion?" (M. Ruse) Science, Vol 299, 1523-4 (2003). Perhaps some type of scientific reformation is needed to truly get mankind to aim his horse straight ahead in the direction of real progress.

With respect to future investigations, Researchers can find inspiration in the following words handed down to us from Emerson:

"Undoubtedly we have no questions to ask which are unanswerable. We must trust the perfection of the creation so far, as to believe that whatever curiosity the order of things has awakened in our minds, the order of things can satisfy".

Not too many decades ago, the Big Bang idea with respect to the origin of the universe was firmly and absolutely rejected by many scientists. Why? Because it conflicted with their dogmatic view that the universe had no "age". If it did - my goodness - that would imply a singular beginning and you know what that means ("dog" spelled backwards!). In our day, we now take for granted that the universe not only had a precise birthday but went on to grow and evolve over time; we can apply the term "Universal Evolution" and not be dismissed by supposed "experts".

We can regard contrived "multiverse" theories as a Neo-rejectionist/anti-Big Bang insurgency driven by the seemingly fanatic need of some to remove any notion of "specialness" at all cost.

This writer is NOT the only critic of the whole multiverse concept. The author of a recent book titled "Farewell to Reality" (© 2013, Jim Baggot, Pegasus Books, N.Y., N.Y.) claims that pursuit of such fabrications threatens the very process of science itself. I base this on the following quote from page 233 of the "FTR" book:

"Finally, and most importantly, we must be concerned about the implications of multiverse theories for the future development of science..... The multiverse theorists know that they are on weak ground regarding [testability], and rather than admit that their theories are NOT science, they argue instead that the rules of science must be adapted to accommodate this kind of metaphysical speculation. They want to change the very definition of science. This is a very slippery slope." [emphasis in original, K.V.]

The depth of THE PROBLEM (note capital letters!) is perhaps best encapsulated by the following quote from Thomas Carlyle, a Scottish writer who had personal contact with people like Emerson and John Stuart Mill:

"Man's unhappiness, as I construe, comes of his greatness; it is because there is an Infinite in him, which with all his cunning he cannot quite bury under the Finite."

In my view, the above quote overlaps with the popularity issue with respect to drivel-works such as "The Catcher in the Rye" referenced earlier.

Sharing the same root (and producing a similar squalid fruit) is the typical human need to tear down or find some fault with individuals and their human institutions. Especially those that might actually dare to set a good example. In other words, the sort of thing that pays the wages of gossip columnists and tabloid writers. And who is ultimately paying their wages? Enablers like us who just love to consume their output. "Holy Peyton Place Batman!"

And now returning to the great science/religion balancing act, Carl Sagan's "Pale Blue Dot" (© 1994 Random House) turns out to contain an interesting proposition. The following quote from page 52 of his twenty-year-old strictly non-drivel book is hereby presented:

"In some respects, science has far surpassed religion in delivering awe. How is it that hardly any major religion has looked at science

and concluded, 'This is better than we thought! The Universe is much bigger than our prophets said, grander, more subtle, more elegant. God must be even greater than we dreamed?' Instead they say, 'No, no, no! My god is a little god, and I want him to stay that way.' A Religion, old or new, that stressed the magnificence of the Universe as revealed by modern science might be able to draw forth reserves of reverence and awe hardly tapped by the conventional faiths. Sooner or later, such a Religion will emerge".

A shorter verse authored by the hermit-poet Emily Dickenson expresses a related sentiment:

"Some keep the Sabbath going to Church
I keep it, staying at home
With a bobolink for chorister
And an Orchard, for a Dome."

Now do you suppose anybody - except maybe a handful of eggheads like Kevin who think too much - will be influenced by the above New Age hippie-much courtesy of Carl and Emily?

The writer Thomas Babington told us:

"[Our] Constitution[s] are all sail and no anchor."

W.B. Yeats had a longer version of basically the same sentiment:

"Things fall apart; the center cannot hold
Where anarchy is loosed upon the world
The blood-dimmed tide is loosed and everywhere
The ceremony of innocence is drowned
The best lack all conviction, while the worst
Are full of passionate intensity."

Not to be forgotten are the related immortal words of Tallulah Bankhead:

"I'm as pure as the driven slush."

The greater mass of people are pretty much mere snowflakes in a collective human avalanche driven by the gravitational pull of power, greed, and all that *Catcher in the Rye* bad stuff. At this stage in human evolution, there is no consistently useful behavioral antigravity. From the viewpoint of this writer, it seems at least as urgently practical to identify and reply what might be called a "misbehavior anti-force" as it is to develop an explanation for

the "dark energy" universal repulsion force that astronomers have observed in recent decades.

I know I sound preachy with all these righteous comments. Anybody making such comments must be careful that his/her halo does not suddenly drop down about a foot and become a noose. Maybe what we all need are antigravity halos that stay levitated with the alienated majesty of the universal dark energy.

Until the day arrives when some mad scientist declares: "I am the brain police!" and provides us with mind-control halos, allow me to tentatively suggest that the next best form of behavioral antigravity could take the form of good old fashioned willpower. This amazing principle could be extended to the Washington, D.C. debtmasters and the credit card addicts who voted them into office. The timeless rebuke of Mark Twain applies here:

"It's easier to stay out than to get out!"

The purpose of religion is supposed to be to supply us with anti-slippery-slope willpower. History teaches, however, that such reliance can lead to dubious outcomes. Too often this-or-that religion ends up providing rationalizations for activities that supply snicker-fodder for atheists.

Certainly this applies to Mr. Putin (supposedly an acolyte of the Russian Orthodox Church) when we consider his Crimea/Ukraine meddling. The Islamic ISIL crowd in the Middle East are also an easy source of dismissive cheap shot material for anti-religionists. Such people are bound by the gravitational pull of gangster Al Capone's Golden Rule:

"It's possible to be much more persuasive with a gun and a smile than with a smile alone".

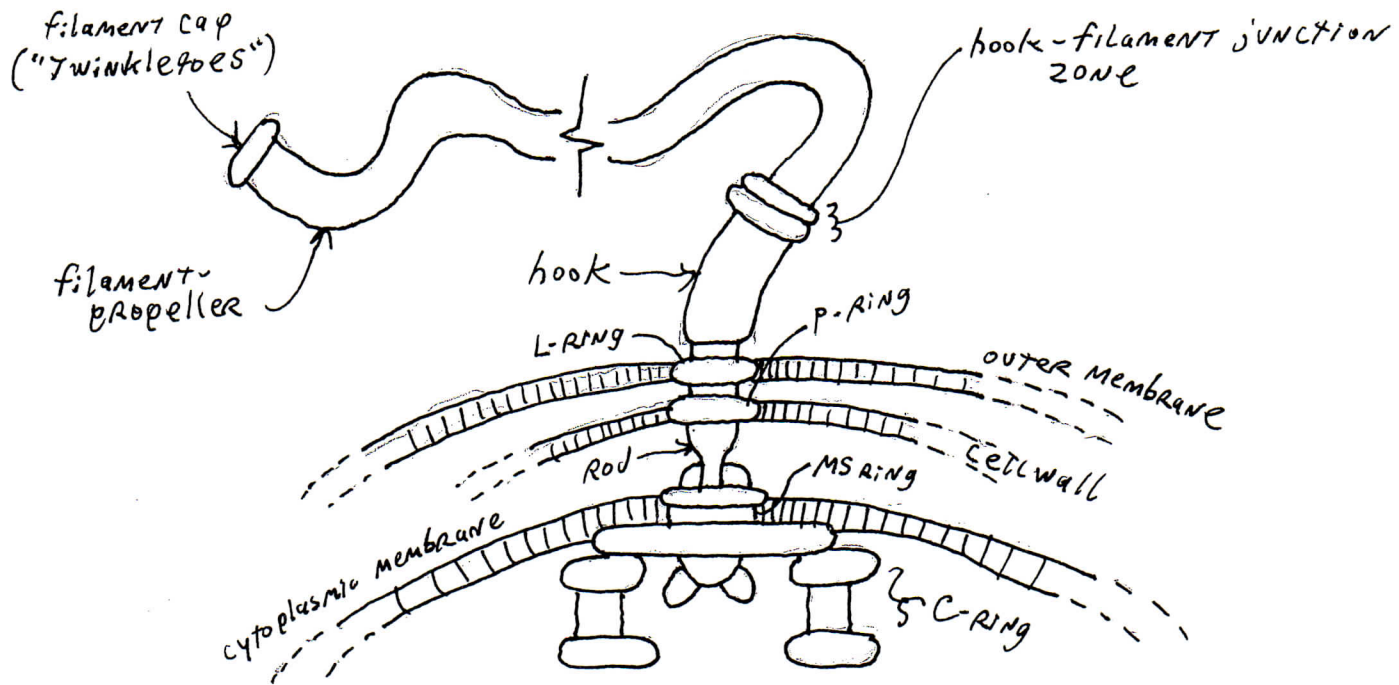
Different gangsters/Same slippery slope religion/Amen!

As a postscript, I can imagine getting dumped on when it comes to my views on science in general and classical evolution in particular. In this hurry-up-and-twittree/short-attention-span world, you are reflexively classified as a "creationist" if you raise the slightest objection to the Mighty Darwin. The critics may even dare to label me as an ultra crepidarian! In my defense, I will respond by saying that at least I know the definition of that word: It refers to somebody who doesn't know what they are talking about!

Kevin

Kevin

From "Appendix C. Assembling the Bacterial Flagellum"
(Found in "The Edge of Evolution")



"A flagellum can be conceptually broken down into three subsystems: The base (which contains the motor), the 'hook' (which acts as a universal joint), and the filament (which is the propeller). Within each subsystem, however, are multiple precision-made parts. The base contains the motor that drives the rotation of the flagellum. It also contains protein parts that act as the stator (to clamp the structure firmly in place), as well as bushings and a protein pump that, as we'll see below, is critical to the assembly of the flagellum. The structure of the base is made of several rings, one of which (the MS ring) is in the cell membrane, the next of which (the P-ring) is in the cell wall, and the next of which (the L-ring) is in the outer membrane. Each of the three rings is made up of about twenty-six copies of its particular protein component.

As shown in [the figure], through the rings is placed a rod, which acts as the drive shaft for the flagellum, transmitting the rotation of the motor to the filament-propeller. The rod contains several different kinds of proteins. The three proteins that compose the part of the rod closest to the cell are present in six copies each, and the protein that makes up the farther part of the rod is present in about twenty-six copies. The proteins of the interior ring have cylindrical symmetry, like balls arranged on a hula hoop, while the rod has helical symmetry, like the thread of a wood screw. Since the two symmetries are mismatched, there is another protein part -

present in nine copies — that seems to act as an adaptor between them, reconciling the discordant symmetries. Also in the base is the protein that acts as the motor, as well as three kinds of proteins that act as molecular switches, which allow the motor to change from spinning in a clockwise rotation to spinning in a counterclockwise one.

The hook is the region that connects the base to the propeller. It consists of 120 copies of another type of protein. When it is being assembled, the length of the hook has to be tightly controlled so it isn't too short or too long. The measurement of the hook length seems to be the job of another protein part. How it measures is not yet clear. After the hook comes the propeller. But it turns out that the mechanical properties needed by something that acts as a universal joint (like the hook does) are not the same as the mechanical properties needed for a propeller. So between the hook and the propeller in the flagellum is a very small but critical region called the junction zone, where several other protein parts (present in copies of a baker's dozen apiece) act as adaptors to fit the two disparate pieces together.

The propeller itself is made of tens of thousands of copies of flagellin, a sophisticated protein that can switch between several different shapes. The different shapes then give the elongated propeller a different curl, with varying swimming properties. Although the word "flagellum" comes from the Latin for "whip", the propeller turns out not to be a solid structure like a bullwhip. Instead, it's hollow like a drinking straw. This feature is critical for the assembly of the flagellum, as we'll now see.

.... The flagellum is built from the bottom up. The first component to be laid down is the basement — the protein ring in the inner cell membrane (the M_S ring). Then, using that structure as a foundation, a sort of housing unit is built on the inside of the cell (called the C-ring). Inside the housing is then assembled a machine, called a Type III export apparatus. The export machinery is like a gun that grabs the correct proteins (which are suitably labeled so the automated machinery can distinguish them from proteins that are not part of the flagellum) and pushes them out to the end of the growing structure. The first proteins to be pushed through are those that make up the rod, along with a special protein that can chew through the cell wall. That is needed so the flagellum can grow beyond the stiff boundary of the cell.

The next stage is the assembly of the other rings, L and P. The proteins that make up these structures don't come through the regular way, however; they are pushed out of the cell by a different set of machinery that is used for the secretion of a variety of other proteins. The protein that makes up the P-ring can't get to the incipient flagellum by itself —

it needs another protein called a chaperone to shepherd it over to the construction site; otherwise, the protein loses its way and never arrives. After escorting the P-Ring protein to its proper destination, the chaperone floats away.

Once the rod is finished, another protein is pushed through the middle of the growing structure to start the hook. The protein isn't one that will be part of the final structure, however. Rather, it's called the "hook cap" protein; it helps keep the actual building components in place as the flagellum grows. After the hook is assembled, the hook cap falls off and floats away. The proteins that make up the junction zone are then grabbed by the export machinery and sent through the export channel to the end of the nascent flagellum.

Finally, we're just about ready to start the business end of the flagellum, the propeller that actually pushes the bacterium forward. But before we do, there's another critical step. Just as the construction of the hook region needed a "cap" at the end, so does the propeller. But it's not the hook cap; it's a different cap. So before the protein pieces that make up the propeller are sent through the export machinery, a "filament cap" precedes them. The cap fits on the end of the hollow flagellum, and as each of the tens of thousands of copies of the propeller protein are pushed down the center to the end, the cap prevents them from seeping out into the surrounding liquid and being lost. In order to traverse the rather thin, hollow central channel of the flagellum, the flagellar proteins have to be kept in an extended shape. When they arrive at the far end, the cap also helps all the copies of the propeller protein to fold into the correct, compact shape. The shape needed to form the propeller.

The filament cap is made up of five copies of a single protein whose official name is "FliD" but I'll call it "Twinkletoes."..... When stuck together, the five protein parts give Twinkletoes a shape that might best be described as a starfish on stilts. The leglike stilts point vertically down from the horizontal pentagonal starfish. Now, the hollow filament of the flagellum is made of multiple copies of flagellin protein arranged in eleven strands, so the fivefold symmetrical cap is slightly mismatched to the ends of the filament. One leg of the cap can fit in a crease between every other strand, but two times five is ten, not eleven, so one crease does not have a cap leg stuck in it.

But the mismatch is not some mistake; it's part of the elegant design of the assembly system. As a copy of flagellin protein is pushed down the hollow tube to be added to the growing end of the filament, it is prevented from floating out into space by the filament cap. The cap allows the flagellin time to fold to its functional shape, and then directs it to fill the empty

space on the growing filament. So the "mismatch" actually directs the protein to the correct, available position. As the flagellin fills the proper vacant position, the pentagonal cap rotates, so that the next available slot is now in position to be filled. To do this, Twinkletoes lifts one of its legs and moves it over a notch. The next copy of flagellin then comes down the [filament tube] and is directed to the right spot, Twinkletoes rotates again to the next space, and the next leg swings over. Tens of thousands of times the dancing machinery automatically directs the right building blocks to the right position, lifts its supply legs, and spins to the next position."

From pages 89-91 of "What Darwin Got Wrong":

"...a particular species of wasp (*Ampulex compressa*) uses a venom cocktail to manipulate the behaviour of its cockroach prey. As in some other species of solitary wasp, the female wasp paralyzes the cockroach without killing it, and then transports it into her nest and deposits her eggs into the belly of the cockroach, so that the hatchlings can feed on the cockroach's live body. What is peculiar to this species of wasp is that, by means of two consecutive stings, separated by a rather precise time interval, in two different and precisely chosen parts of the cockroach nervous system, the wasp becomes capable of literally 'driving' the zombified cockroach into her prepared nest. The wasp does not have to physically drag the cockroach into the pit, because it can manipulate the cockroach's antennae, or literally ride on top of it, steering it as if it were a dog on a leash, or a horse by a bridle ["Wasp uses venom cocktail to manipulate the behavior of its cockroach prey" (F. Libersat) *Journal of Comparative Physiology A*, Vol 189, 499-508 (2003)]. The first sting in the thorax causes a transient front leg paralysis lasting a few minutes. Some behaviours are blocked but not others. The second sting, several minutes after, is directly in the head.

As a result the wasp can grab one of the cockroach's antennae and walk to a suitable oviposition location. The cockroach follows the wasp in a docile manner like a dog on a leash ["*Ampulex compressa*, a cockroach-hunting wasp introduced from New Caledonia into Hawaii" (F. Williams) *Proceedings of the Hawaiian Entomological Society*, Vol 11, 221-233 (1942)] + ["The venom of the cockroach-hunting wasp *Ampulex compressa* changes motor thresholds: A novel tool for studying the neural control of arousal" (K. Fouad, F. Libersat, and W. Rathmayer) *Zoology*, Vol 98, 23-34 (1994)]. A few days later, the cockroach serves as an immobilized and fresh food source for the wasp's offspring.

This rather horrendous entomological saga suggests some key evolutionary questions. Such complex, sequential, rigidly pre-programmed behaviour could have gone wrong in many ways, at any one of its steps. The biochemical nature of the cocktail of venoms could have been different in many ways, being, as a result, either totally ineffective, or overdoing it, by killing the prey. The timing and location of the stings could have gone wrong in many ways, letting the cockroach recover, for instance, and kill the much smaller wasp. The wasp could have failed to "understand" that the prey can be led by the leash, after these two master strokes, and could have painfully dragged the rather big body to the nest. And so on and so on. The ways in which this behavioural sequence could have gone awry are indeed innumerable. Not even the most committed adaptationist Neo-Darwinians suppose that all kinds of alternatives have been blindly tried out by the ancestors of the wasp and that better and

better solutions were progressively selected, and that this optimal solution was finally retained and encoded for in the genes. True: Wasps have been around for a very long time (some 400 million years, maybe more) but even this is not a long enough time to try out innumerable alternative behavioural solutions, with alternative possibilities conceivable at each step of the behavioural sequence. What, then? No one knows at present. Such cases of elaborate innate behavioural programs (spider webs, bee foraging, and many more [noted on previous pages]) cannot be accounted for by means of optimizing physico-chemical or geometric factors. But they can hardly be accounted for by gradualistic adaptation either. It's fair to acknowledge that, although we bet that some naturalistic explanation will one day be found, we have no such explanation at present. And if we insist that "[Darwinian] natural selection is the only way to try, we will never have one."